Results: More sustained attention lapses per participant were seen on the combined task than the PVT task (median 15 vs. 3; range 1-74 vs. 0-76, p = .001), with a greater time-on-task effect (F(5,264) = 4.02, p = .002) evident on the combined task. By contrast, fewer microsleeps (median 0 vs. 0; range 0-1 vs. 0-18, p = .022) occurred during the combined task than the tracking task alone. There was a time-on-task effect evident for microsleeps, but only during the tracking task (Chi-squared test(2,N = 23) = 6.72, p = .035).
Conclusion: The results support the resource depletion theory for attention lapses over the mindlessness theory, with increasing task engagement and cognitive workload and, therefore, resource demand increasing sustained attention lapses over time. Conversely, increasing task engagement almost eliminated microsleeps. Clarifying the relationship between task engagement, cognitive workload, sustained attention lapses, and microsleeps is important if we are to avoid inadvertently increasing these insidious—and potentially fatal—lapses of responsiveness.

0142

ASLEEP AT THE WHEEL: ASSOCIATION BETWEEN DROWSY DRIVING AND OTHER RISK BEHAVIORS AMONG DRIVERS FROM 10 STATES AND PUERTO RICO, 2011

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Introduction: Drowsy driving has been estimated to contribute to up to a third of fatal motor vehicle crashes. However, information on how drowsy driving is associated with other risk behaviors that may also contribute to crash injuries or fatalities is limited.
Methods: Behavioral Risk Factor Surveillance System respondents from 10 states (Alaska, California, Kansas, Maine, Massachusetts, Minnesota, Nebraska, Nevada, Oregon, and Tennessee) and Puerto Rico were asked, "During the past 30 days, have you ever nodded off or fallen asleep, even just for a brief moment, while driving?" Age-adjusted prevalence of drowsy driving (an affirmative response) among 68,665 drivers aged ≥ 18 years by sleep-related and other risk behaviors was determined.
Results: Overall age-adjusted prevalence of drowsy driving in the previous 30 days was 4.0%, ranging from 1.5% in Oregon to 7.6% in Puerto Rico. Respondents who usually slept ≤ 5 hours per 24 hours reported drowsy driving more often than those who slept 6 hours or 7 or more hours (9.0% vs. 5.2% and 2.6%, p < 0.001), as did snorers compared to non-snorers (5.6% vs. 2.9%, p < 0.0001). In addition, drowsy driving was more prevalent among heavy drinkers than non-heavy drinkers (6.8% vs. 3.8%, p = 0.011); among binge drinkers than non-binge drinkers (5.3% vs. 3.6%, p = 0.003); and among drivers who sometimes, seldom, or never wear seatbelts while driving or riding in a car compared to those who always or almost always wear seatbelts (6.6% vs. 3.9%, p = 0.006). Drowsy driving did not vary by smoking status.
Conclusion: Drowsy driving was associated with excessive alcohol use and not wearing seatbelts, which may further exacerbate the consequences of drowsy driving crashes. Drivers who engage in these risk behaviors may be a good target for drowsy driving education.

0143

THE EFFECT OF LONG-DURATION, MULTI-SEGMENT FLIGHTS ON PILOT SLEEP AND PERFORMANCE

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Introduction: The Island Hopper, a commercial flight operation, originates in Guam, makes three stops in Micronesia, two stops in the Marshall Islands, has a layover in Honolulu, and returns to Guam by the reverse route. Flown with an augmented crew of three pilots, at any given time in-flight, one of the three pilots is free to rest or sleep. Island Hoppers are not compliant with Federal Aviation Administration (FAA) regulations. Island Hopper flights were compared to other Guam-based flights flown by the same pilots. The other Guam-based flights are compliant with FAA regulations.
Methods: We measured pilot sleep/wake history with the actigraph, predicted effectiveness with the SAFTE/FAST performance prediction model using actigraphically-derived sleep/wake history as input, fatigue with the Samn-Perelli Fatigue Scale, and sleepiness with the Karolinska Sleepiness Scale. We compared flights by operation (Island Hopper vs. non-Island Hopper), flight type (outbound vs. inbound), and flight phase (top of climb vs. top of descent). We used mixed effects analysis of variance to test for differences and the two, one-sided test to test for equivalence.
Results: We found no differences in predicted effectiveness, fatigue, or sleepiness between Island Hopper and non-Island Hopper flights. We found equivalence for predicted effectiveness between Island Hopper and non-Island Hopper flights at top of final descent. We found differences in predicted effectiveness, fatigue, and sleepiness with inbound degraded relative to outbound and top of descent degraded relative to top of climb.
Conclusion: The Island Hopper and non-Island Hopper flights were not different on measures of predicted effectiveness, fatigue, and sleepiness. For predicted effectiveness, Island Hopper and non-Island Hopper flights were equivalent at top of final descent into Guam. On metrics associated with safety, the FAA non-compliant Island Hopper appears equivalent to FAA compliant non-Island Hopper flights.
Support (If Any): The study was supported by United Airlines.

0144

SLEEP QUALITY AMONG POLICE OFFICERS: ASSOCIATIONS WITH OVERTIME AND SECOND JOBS

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Introduction: Sleep quality is an important issue in police work. This study examined cross-sectional associations of two factors that may affect police sleep quality: overtime work and additional employment (second jobs).
Methods: Participants (n = 402) were police officers from the Buffalo Cardio-Metabolic Occupational Police Stress Study examined between 2004 and 2009. Officers self-reported overtime work hours during their regular job and hours worked on a second job. Sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI) with higher scores indicating poorer sleep quality. Analysis of covariance was used to examine unadjusted and multivariable-adjusted sleep quality across categories of overtime hours. Trends were tested by fitting linear regression models. Analyses were stratified by hours worked on a second job. Adjustments were made for age, gender, race/ethnicity, and police rank.
Results: In this cohort of officers (mean age = 42 years, SD = 8.1), 74% were male, 78% Caucasian, and 67% patrol officers. There was a significant association between overtime work hours and sleep quality (trend p-value = 0.033). Sleep quality worsened with increasing overtime work hours and the association remained significant after covariate adjustment (trend p-value = 0.009). The association of overtime work hours and sleep quality was dependent on hours worked at the second job (interaction p-value = 0.043). The significant association was evident only among those officers who worked over 10 hours per week at their second job (n = 63, adjusted PSQI mean ± SE global sleep score by

overtime categories: 6.8 ± 0.6, 6.1 ± 0.9, and 8.6 ± 0.9 for 0, < 8, and ≥ 8 overtime hours per week, respectively, trend p-value = 0.014).
Conclusion: Overtime work was associated with poor sleep quality, particularly among officers who also worked more than 10 hours per week on a second job. Prospective studies will enhance evidence-based recommendations regarding reasonable levels of overtime and second job work hours that will permit maintenance of good sleep quality.
Support (If Any): National Institute for Occupational Safety and Health contract 200-2003-01580.

0145
GLYCOGEN SYNTHASE KINASE 3-BETA GENOTYPE IS ASSOCIATED WITH SLEEP DURATION IN COLLEGE STUDENTS

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Introduction: Glycogen synthase kinase 3-Beta (GSK3β) plays a key role in a wide range of cellular processes including phosphorylation and stabilization of a component of the circadian clock, Rev-erb-alpha. In patients with bipolar disorder, single nucleotide polymorphisms (snps) in GSK3β have been associated with enhanced antidepressant response to sleep deprivation, earlier age of disease onset, and efficacy of lithium treatment. The aim of this analysis was to explore associations of GSK3β genotype with sleep duration and mood in college students.
Methods: 680 students (mean age (SD) = 18.6 (0.5) yrs, 59.9% female) completed daily online sleep diaries during the first 8-9 weeks of their first semester at Brown University. We calculated mean total sleep time (TST) across the semester and measured depressive symptoms with the Center for Epidemiologic Studies Depression scale (CES-D) at week 9. Students provided cheek cells for DNA extraction. Genotyping for 8 GSK3β Tag snps (rs9826659, rs11921360, rs13321783, rs6775397, rs6774210, rs968824, rs11916594, and rs334555) was performed using a Sequenom array. Data were analyzed with PLINK, Haploview, and SPSS.
Results: Average reported TST (SD) was 7.16 (0.67) hrs and average CES-D score (SD) was 14.7 (9.7). Two snps (rs11921360, rs13321783) were not in Hardy-Weinberg equilibrium and one snp (rs968824) had a low genotyping rate of only 64%; therefore, these snps were excluded from further analyses. None of the remaining 5 GSK3β snps was associated with CES-D score. The snp rs9826659 was associated significantly with diary TST irrespective of mood (β = 0.097, T = 2.104, p = .035). Students with A/A genotype had shorter mean reported TST (SD) across the semester (7.05 (0.66) hrs) than those with the A/G (7.19 (0.67) hrs) or G/G (7.19 (0.63) hrs) genotypes.
Conclusion: In our sample of first-semester college students, the A/A genotype of the GSK3β snp rs9826659 was associated with shorter reported total sleep time. These data indicate that polymorphisms in circadian clock genes may play a role in sleep length in young adults.
Support (If Any): MH079179 and the Sleep Research Society Foundation Elliot D. Weitzman, M.D. Research Grant (MAC), MH086689 (KMS).

0146
SLEEP SCHEDULE REGULARITY IN THE TRANSITION FROM HIGH SCHOOL TO COLLEGE

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Introduction: College students are known for having poor sleep and irregular sleep schedules. However, little research has been done examining the changes in sleep schedules from high school to college. We utilize a new questionnaire to examine such changes. We hypothesize that students will transition from a more regular schedule in high school to a less regular one in college and that students with more evening tendencies will have a more irregular sleep schedule.
Methods: Data were obtained from 78 college freshmen (25 males). The Morningness-Eveningness Questionnaire (MEQ) was used to assess morning and evening tendencies. The Sleep Schedule Regularity Questionnaire (SSRQ), created for this study, was used to assess sleep schedules at baseline, during the summer, and during the last semester of high school. Higher scores on the SSRQ subscales indicate a more regular sleep schedule.
Results: The SSRQ had good reliability (α = .83). Morning tendencies were associated with a more regular current sleep schedule (r = .42, p < .001) and a more regular sleep schedule in the last semester of high school (r = .33, p < .001). Students also showed less regular sleep schedules in college than high school (t = 6.1, p < .001) and during the summer than in high school (t = 5.3, p < .001).
Conclusion: Students' sleep schedules become less regular when they transition from high school to college. This may in part be explained by the fact that fewer of them are awakened by a parent or another person in college (n = 19) as compared to high school (n = 33), as well as the fact that they are free to set their own bed times. Additionally, students who have more morning tendencies tend to have a more regular sleep schedule across time, consistent with current literature.

0147
ACTIGRAPHICALLY ESTIMATED SLEEP AND LUX LEVELS IN COLLEGE STUDENTS' LIVING ARRANGEMENTS

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Introduction: Few studies have examined the effects of dormitory living on students' sleep including light levels and technology use (e.g., smart phones, laptops, TVs). Increased exposure to nocturnal light may influence students' sleep. Using actigraphically estimated sleep and lux levels, this preliminary study examined sleep, lux, and technology use for students sharing a bedroom off a hallway vs. students with bedrooms and adjoining common rooms.
Methods: Participants (N = 36 2nd/3rd year) completed the Sleep and Lifestyle in College Dorms Questionnaire and were given two actigraphs (one to estimate sleep patterns; one placed next to sleep area to estimate light throughout night). Participants provided information about living arrangements, electronics and daytime sleepiness, wore an actigraph, and completed a sleep diary for one week.
Results: Although there were no sleep differences for students living with/without a common room, students without a common room reported more tech devices in their bedrooms than students with common rooms (5.5 vs. 4.1, p = .03). Students with fewer than 4 tech devices in their living environment vs. those with 5-12 devices had earlier weeknight onset times (12:15 vs. 1:10 am) and longer sleep periods (463 vs. 413 min, p's < .05). Key associations were found between lux levels, tech devices, and sleep patterns including weekday offset times and lux above 20% during sleep period (r = .38, p = .02) and number of tech devices and lux above 20% (r = .30, p = .05).

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